# Insulating Coatings for Implant Devices & Ribbon Cables

Grant R44 NS041113-03 | Period of support: 06/2004 – 05/2006

Challenge/Problem: To develop flexible micro-electrode arrays with integrated interconnects and substrate for surface-mounted electronics as neural interface for the retina. Improve long-term in-vivo stability and biocompatibility under stimulating pulsed conditions.

Approach: Embed and integrate microelectrode arrays, interconnecting leads and circuitry traces on a single flexible polyimide foil. To achieve long term in-vivo stability we will combine our proprietary A-Coat encapsulation technology for flex substrates with our proprietary metal-to-flex substrate adhesion technology.

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Progress: Large flexible polyimide-based epiretinal arrays (10 mm diameter) were designed, micro-fabricated and chronically implanted in dogs. The design allows insertion of the array into the vitreous cavity through a 5 mm scleral incision. Acute stimulation experiments and long term bio-compatibility and stability studies are in progress.

Current/Near Term Products: Development of novel encapsulated flexible microelectrode arrays with integrated interconnects and flex substrate for surface-mounted electronics as active interface (stimulating) to the neural system in the retina of the human eye.

Future Plans: Develop a novel chip-to-flex substrate assembly technique which will reduce the size of the stimulator implant device substantially and improve the connectivity between flex substrate and electronic chip and integrate with the retinal microelectrode arrays.